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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,416	05/09/2001	John Canning	CU-2504 RJS	4223

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EXAMINER

VALENTIN, JUAN D

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 09/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/831,416

Applicant(s)

CANNING, JOHN

Examiner

Juan D Valentin II

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-22, 24 and 26-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-22, 24 and 26-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 18, 20-22, 26, 34, 38, 40, & 45 rejected under 35 U.S.C. 102(e) as being anticipated by Tseng et al. (USPN '188, hereinafter Tseng).

Claim 18

Tseng discloses an optical waveguide structure comprising an optical waveguide having a bend and being formed of a photosensitive material and having a bend for coupling the light signal around the bend (Fig. 1a, abstract). Tseng discloses a grating structure arranged to guide light of a predetermined wavelength around the bend in the waveguide (Fig. 1a, 30) thereby to reduce bending losses at the bend. Tseng discloses a grating structure comprising **UV-induced** refractive index variations in the waveguide (abstract). Tseng meets all the structural limitations of claim 18, in doing so it is inherent that the functional limitations of the claim will fall into place once the structural limitations are met.

Claims 20 & 40

Tseng further discloses an optical waveguide structure wherein the grating structure comprises a sampled grating (abstract). Applicant will be appreciated that even though Tseng does not specifically disclose a sampled grating, Tseng does disclose a tunable reflector/filter. It is inherent and well known to someone of ordinary skill in the art that a tunable reflector/filter

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comprises a sampled grating, therefore the reference of Yoshimura reads upon the Applicants claimed limitation.

Claims 21 & 22

Tseng discloses an optical waveguide structure wherein the grating structure is disposed to guide the light in a transmission mode or reflection mode (abstract).

Claim 26

It is the position of the Office that when the refractive index of the grating is not being tuned, it includes regions of constant reflective index which extend in a propagation direction of the waveguide, therefore reading on Applicants claimed limitations.

Claim 34

Tseng discloses a method of reducing bending losses in a photosensitive waveguide having a bend for coupling a light signal propagating in the waveguide around the bend (Fig. 1a, abstract). Tseng discloses using **UV light to induce** refractive index variations in the waveguide such that at least one grating structure is formed, wherein the grating structure is disposed to guide the light around the bend (abstract). Tseng meets all the structural limitations of claim 18, in doing so it is inherent that the functional limitations of the claim will fall into place once the structural limitations are met.

Claim 38

Tseng discloses a optical waveguide having a bend and being formed of a photosensitive material (Fig. 1a, abstract). Tseng further discloses a grating (Fig. 1a, 30) structure arranged to guide light of a predetermined wavelength in a transmission mode around the bend in the

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waveguide, the grating structure comprising **UV-induced** refractive index variations in the waveguide (abstract).

Claim 45

Tseng discloses a method of adapting a photosensitive waveguide to guide light of a predetermined wavelength around a bend in the waveguide (Fig. 1a, 10, abstract). Tseng discloses using **UV light to induce** refractive index variations in the waveguide such that at least one grating structure is formed, wherein the grating structure is disposed to guide light in a transmission mode around the bend (abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 19, 24, 35, 36, 39, 46, and 47 rejected under 35 U.S.C. 103(a) as being unpatentable over Tseng.

Claims 19, 24, 36, 39, & 47

Tseng discloses the claimed invention except it fails to show the wherein the grating structure comprises a continuous or chirped grating structure. It would have been obvious to someone of ordinary skill in the art at the time of the claimed invention to combine Tseng with either a continuous or chirped grating structure since it was well known to someone of ordinary

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skill in the art at the time of the claimed invention that Bragg Fiber Grating (BFG) structures can be designed to operate in several different manners depending on the desired outcome and Tseng teaches the use of a BFG (col. 1, line 50).

Claims 35 & 46

Tseng discloses the claimed invention except it fails to show wherein the grating structure creates an angular dispersion in the light propagated around the bend. It is inherent that the claimed invention creates an angular dispersion in the light propagated around the bend since it was well known in the art that gratings create dispersion, and gratings around a bend ultimately will create angular dispersion in light signals propagating those bends.

3. Claim 27-30, 33, 41, and 44 rejected under 35 U.S.C. 103(a) as being unpatentable over Tseng in view of Facq. Et al. (USPN '437, hereinafter Facq).

Claim 27

Tseng substantially teaches the claimed invention except that it fails to show an optical waveguide structure wherein the regions extend parallel to the propagation direction. Facq shows that it is known to provide an optical waveguide structure wherein the regions extend parallel to the propagation direction (col. 3 and 4, lines 67-68 and 1-2) for an optical fiber Bragg grating system. It would have been obvious to someone of ordinary skill in the art to combine the device of Tseng with the optical waveguide structure wherein the regions extend parallel to the propagation direction of Facq for the purposes of providing efficient coupling of light signals from one optical fiber to another.

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Claim 28

Tseng substantially teaches the claimed invention except that it fails to show an optical waveguide structure wherein the regions extend cylindrically parallel to the propagation direction. Facq shows that it is known to provide an optical waveguide structure wherein the regions extend cylindrically parallel to the propagation direction (col. 5, lines 35-48, Fig. 6A and 6B) for an optical fiber Bragg grating system. It would have been obvious to someone of ordinary skill in the art to combine the device of Tseng with the optical waveguide structure wherein the regions extend cylindrically parallel to the propagation direction of Facq for the purposes of providing efficient coupling of light signals from one optical fiber to another.

Claim 29

Tseng in view of Facq in conjunction with claim 28 rejection above, discloses the claimed invention except it fails to show an optical waveguide structure wherein the regions extend ellipsoidally parallel to the propagation direction. It would have been an obvious matter of design choice to someone of ordinary skill in the art to combine Tseng in view of Facq with an optical waveguide structure wherein the regions extend ellipsoidally parallel to the propagation direction. The applicant has not disclosed that an ellipsoidal grating region parallel to the propagation direction solves any stated problem or is for any particular purpose, it is a matter of design choice to choose the length of grating regions in radial directions and it is the position of the Office that the circular region disclosed by Tseng in view of Facq reads upon the applicants claimed limitation.

Claims 30 & 41

Tseng substantially teaches the claimed invention except that it fails to show an optical waveguide structure wherein the device further comprises at least one optical reflector disposed in a direction transverse to a propagation direction of the waveguide to aid in guiding the light around the bend. Facq shows that it is known to provide an optical reflector disposed in a direction transverse to a propagation direction of the waveguide (Fig. 4, col. 4 and 5, lines 64-68 and 1-12, resp.) for an optical fiber Bragg grating system. It would have been obvious to someone of ordinary skill in the art to combine the device of Tseng with the optical reflector disposed in a direction transverse to a propagation direction of the waveguide of Facq for the purposes of providing efficient propagation of light signals through a bend waveguide.

Claims 33 & 44

Tseng substantially teaches the claimed invention except that it fails to show an optical waveguide structure as a sensor further comprising means for measuring an intensity of the light at a predetermined point along the waveguide for determining changes in intensity due to induced changes in confinement conditions of the sensor. Facq shows that it is known to provide an optical waveguide structure as a sensor further comprising means for measuring an intensity of the light for an optical fiber Bragg grating system (col. 5, 6, and 7, lines 35-68, 1-68, and 1-13, resp.). It would have been obvious to someone of ordinary skill in the art to combine the device of Tseng with the optical waveguide structure as a sensor of Facq for the purposes of providing efficient propagation of light signals through a bend waveguide.

It is obvious and well known to someone of ordinary skill in the art that the measured flux of Facq is equivalent to the claimed measured light intensity of Applicant. Facq shows

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different sensors for different changes in confinement conditions as well. Therefore, Applicant will be appreciated that the reference of Tseng in view of Facq reads upon the claimed limitations.

4. Claim 31 & 42 rejected under 35 U.S.C. 103(a) as being unpatentable over Tseng in view of Yoshimura et al. (USPN '632, hereinafter Yoshimura).

Claims 31 & 42

Tseng substantially teaches the claimed invention except that it fails to show an optical waveguide structure wherein the device comprises two or more grating structures angularly disposed with respect to each other to guide the light around a plurality of bends in the waveguide. Yoshimura shows wherein the device comprises two or more grating structures angularly disposed with respect to each other to guide the light around a plurality of bends in the waveguide (Fig. 45, col. 17, lines 4-43) for an optical waveguide system. It would have been obvious to someone of ordinary skill in the art to combine the device of Tseng with the optical waveguide device of Yoshimura for the purposes of providing efficient propagation of light signals through a bend waveguide.

5. Claims 32, 37, 43, & 48 rejected under 35 U.S.C. 103(a) as being unpatentable over Tseng in view of Fokine et al. (USPN '018 B1).

Claims 32, 37, 43, & 48

Tseng substantially teaches the claimed invention except that it fails to show wherein each grating structure is formed by UV-holography. Fokine shows that is known to provide

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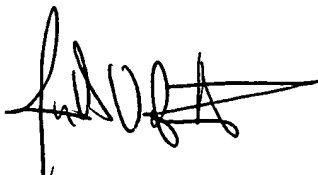
grating structures produced by UV-holography (col. 8, lines 26-36) for an optical means with a periodically varying refractive index. It would have been obvious to someone of ordinary skill in the art to combine the device of Tseng with the grating writing method of Fokine for the purposes of providing efficient propagation of light signals through a waveguide.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan D Valentin II whose telephone number is (703) 605-4226. The examiner can normally be reached on M-Th., Every other Fr..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (703) 308-4881. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308- 0955.



Juan D Valentin II
Examiner 2877
JDV



Michael P. Stafira
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Technology Center 2800